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ON THE JAPANESE SPECIES OF THE GENUS AMIOTA LOEW (Diptera, Drosophilidae)

By Toyohi Okada<sup>1</sup>

Although the genus *Amiota* Loew is one of the most widely distributed genera of Drosophilidae, covering all of the geographic regions of the world except Arctic and Antarctic regions, the number of species in each region is comparatively poor, and in Japan only three species have hitherto been recorded, i. e. *Amiota* (*Amiota*) *alboguttata* (Wahlberg), *A. (A.) stylopyga* Wakahama & Okada and *A. (Phortica)* *variegata* Fallén. In the present report three new and an unrecorded (?) species will be described from Japan, and the Japanese representatives of *A. (A.) alboguttata* will be divided into four forms.

The author wishes to express his sincere thanks to Prof. E. B. Basden, Institute of Animal Genetics, Edinburgh, for his kindness of sending to the author valuable specimens of a European form of ? *alboguttata*<sup>2</sup>. Many thanks are also due to Dr. F. A. Turk, "Shang-ri la" Reskadinnick, Cornwall, for his kind present of important literature. Aside the author's own collection, the Japanese specimens examined have been bestowed to him by Dr. K. Hori of Kanazawa University, Prof. D. Moriwaki of Tokyo Metropolitan University and Prof. Y. Nagata of Miyazaki University, to whom the author's cordial thanks are due.

The type specimens are deposited at the Department of Biology, Faculty of Science, Tokyo Metropolitan University.

Key to species of the genus *Amiota* Loew from Japan

- 1. Humerus and wing-base distinctly white. 3rd costal section with prominent wart-like bristles. Aedeagus usually bifid almost entirely. *orb*<sub>2</sub> about 2/3 length of *orb*<sub>3</sub>. ..... Subgenus *Amiota* Loew. ... 2
- Humerus and wing-base not distinctly white. 3rd costal section with only minute indistinct wart-like bristles. Aedeagus single. *orb*<sub>2</sub> about 1/2 length of *orb*<sub>3</sub>. ..... Subgenus *Phortica* Schiner. ... 10
- 2. Body tannish brown. Aedeagus slender, much longer than the anterior para-

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<sup>2</sup> Prof. Basden cautiously places?, as he did not yet compared the male genitalia between these specimens and the types of *alboguttata*.

Body 3mm  
Humerus not distinctly white  
Aedeagus single  
orb2 about 1/2 length of orb3  
Body tannish brown  
Aedeagus slender  
much longer than the anterior para-

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Body tannish brown  
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- meres, which are fused to the base of aedeagus. Ventral branches of arista nearly as long as the dorsal ones. .... *A. (A.) stylopyga* Wakahama & Okada
- Body blackish. Aedeagus usually as long as or shorter than the anterior parameres, which are fused to or closely apposed to the aedeagus. .... 3
  - 3. Aedeagus thicker than the anterior parameres, which are pale and slender. Legs black except tarsi and trochanters, which are yellowish. Ventral branches of arista distinctly shorter than the dorsal ones. Larger species with body about 3.5 mm. .... ? *A. (A.) albilabris* (Zetterstedt)
  - Aedeagus as thick as or thinner than the anterior parameres. Legs entirely yellowish or fore femora alone blackish. Body smaller. .... *A. (A.) alboguttata* f. nov. the latter
  - 4. Front dark velvety reddish brown, black below. Fore femur black except at tip. Anterior parameres exceedingly elongate, saw-like. Aedeagus single, short and conical. Apodeme of aedeagus rod-like. Clasper with teeth on its ventral margin. .... *A. (A.) promissa* sp. nov.
  - Front black, often with silvery white pollinosity below. Fore femur entirely yellow. Anterior parameres not exceedingly elongate. Aedeagus paired. Apodeme of aedeagus fan-shaped. Clasper with teeth on its distal margin. .... 5
  - 5.  $R_{4+5}$  and M exceedingly convergent at tips, Cx-index\* about 0.5. Ventral branches of arista much shorter than the dorsal ones. Anterior parameres completely fused with aedeagus. .... *A. (A.) dispina* sp. nov.
  - $R_{4+5}$  and M gently convergent, Cx-index about 0.7 or more. ....
  - 6. Ventral branches of arista absent. Genital arch parallelsided, not exceedingly broadened below. Cx-index about 1.0. .... *A. (A.) ? alboguttata*, a European form
  - Ventral branches of arista as long as or slightly shorter than the dorsal ones. Genital arch tapering above, broadened below, toe rectangular. Cx-index various, usually less than 1. .... 7
  - 7. Cx-index usually less than 0.8. Ventral branches of arista slightly shorter than the dorsal ones. Front usually prominently pollinose in silvery white. Aedeagus lobe and anterior paramere black, hook-like, apparently united with each other to become a Y-shaped organ. .... *A. (A.) alboguttata*, forma *furcata* f. nov.
  - Cx-index usually more than 0.8. Ventral branches of arista nearly as long as the dorsal ones. Front with or without faint pollinosity. .... 8
  - 8. Aedeagus and anterior parameres black, stout, club-shaped at tips, and closely apposed with each other. .... *A. (A.) alboguttata*, forma *clavata* f. nov.
  - Aedeagus pale, fine and slender, not clavate. .... 9
  - 9. Anterior parameres black, L-shaped. Aedeagus lobe composed of 2 fine pale slender flaps and a short dentated black process. .... *A. (A.) alboguttata*, forma *elongata* f. nov.
  - Anterior parameres pale, apparently fused with each other to become a massive structure. Aedeagus lobes simple, longer than the anterior paramere, and

\* Cx-index is newly devised to indicate the length-ratio of the 4th costal section and the posterior crossvein.

ant. of a form  
largely found  
in acuta  
post-paramere  
post-paramere widely  
yellowish beyond  
margin of arista  
Cx-index 0.7

- basally fused with each other, ..... *A. (A.) alboguttata*, forma *nagatai* f. nov.
10. Abdominal tergites with medially projected caudal black bands. Aedeagus apically with a pair of recurved spines. Clasper without strong teeth.....  
.....*A. (P.) variegata* (Fallén)
- Abdominal tergites with medially not projected caudal black bands. Aedeagus apically tapering, without recurved spines. Clasper with a stout tooth. ....  
.....*A. (P.) magna* sp. nov.

***Amiota (Amiota) stylopyga* Wakahama & Okada**

*Amiota (Amiota) stylopyga* Wakahama & Okada, 1958. Annot. Zool. Japon., 31:109.

Hitherto collected at Numanohata, Hokkaido, alone. The author obtained a male at Kuzakai, Iwate Pref., 5. VII. '58.

**? *Amiota (Amiota) albilabris* (Zetterstedt) (Fig. 1, A-H)**

Male. Body about 3.5 mm, glossy black. Eye dark reddish brown, bare. Antenna dark brown, 3rd joint somewhat fusiform, thrice as long as broad. Arista with about 9 branches including a minute fork; ventral branches about 4, shorter than the upper ones. Palpus black, elongate and curved upward, with a prominent subapical, a long submedian and a few shorter marginal setae. Ocellar triangle black. Periorbit black, short, not extending beyond half way of the front. Front dark brown, lower half with grey pollinosity, and about 2/5 as broad as head width, narrowing below. A few frontal hairs present. Clypeus black, narrow. Face glossy black, lower half milky white. Cheek brown, narrow, about 1/8 as

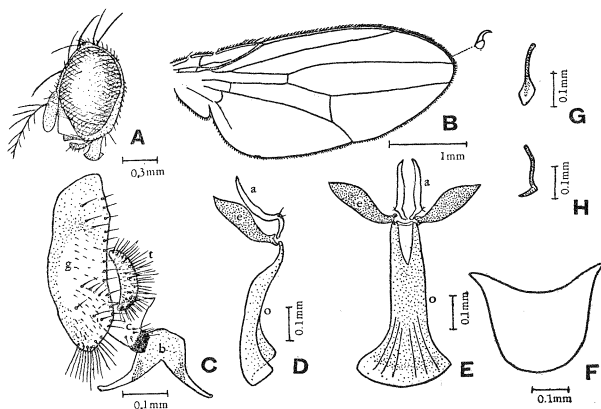


Fig. 1. ? *Amiota (Amiota) albilabris* (Zetterstedt). Male. A, Head; B, Wing; C, Periphallic organs; D, E, Phallic organs; F, Ventral fragma; G, H, Ejaculatory apodeme.

broad as the greatest diameter of eye. Occiput black and concaved. *orb*<sub>2</sub> slightly shorter than *orb*<sub>3</sub> and about twice as remote from *orb*<sub>1</sub> as from *orb*<sub>3</sub>, which is slightly shorter than *orb*<sub>1</sub>. A few reclinate short hairs present along eye-margin below orbitals. 1 prominent oral.

Mesonotum glossy black, *ac* in about 12 irregular rows. Prosteronum pollinose white. Scutellum black, somewhat pollinose, anterior scutellars divergent, as long as posteriors, which are also divergent. Humeral region white as usual, with 1 long humeral. Prescutellars long, about 3/5 as long as the posterior *dc*, which is about twice the length of anteriors. Cross distance of *dc* about thrice the length distance. Mesopleura black, somewhat pollinose, with white subalar spot as usual. Sterno-index about 0.8.

Legs black, trochanter, knee-joints and tarsi pale yellowish grey, fore metatarsus and hind tarsi with several upright hairs. Preapicals on all three tibiae, apicals on middle. Wings (Fig. 1, B) hyaline, veins yellow, crossveins clear. 3rd costal section with about 15 minute wart-like bristles on its distal half. *R*<sub>2+3</sub> nearly straight. *R*<sub>4+5</sub> and *M* strongly convergent distally, 4th costal section slightly shorter than the posterior cross-vein (*Cx*-index being about 0.7), which is slightly sinuate. *C*-index about 2.2, 4*V*-index about 2.4, 4*C*-index about 1.4, 5*x*-index about 1.0. 1st costal section with 2 subequal terminal setae, 3rd costal section with heavy bristles on its basal 2/3. Halteres whitish yellow.

Abdominal tergites almost entirely glossy black, 1st and 2nd tergites somewhat pale brownish at their posterior margins and submedian regions.

Periphallalic organs (Fig. 1, C): Genital arch oblong, black and thickly hairy, paler below, heel absent, toe low and rounded. Clasper yellowish, triangularly projected above, distally with a row of about 12 somewhat curved rather long teeth, upper teeth being shorter. Anal plate black, hairy and pubescent, separated from genital arch. Decasternum nearly pentagonal, pale brownish yellow, and with a pair of hyaline divergent arms below.

Phallic organs (Fig. 1, D, E): Aedeagus black, bifid, fusiform, and distally pointed. Anterior paramere slender, right-angularly folded near base, and with a few sensilla at the tip of the fold. Apodeme of aedeagus brownish, broad, twice as long as the aedeagus, distally dilated and basally bifid. Ventral fragma quadrate, pale brown, with rounded tip. Posterior parameres seemingly absent.

Internal structures: Ejaculatory apodeme (Fig. 1, G, H) with a sinuate stem and a short rhombic plate.

Specimens examined: ♂♂, Usubetsu, Jōzankei, Hokkaido, 2. VII. '58, collected about human eyes (T. Okada).

Distribution: Hokkaido, Europe (?).

Relationships: It is presumptively identified as *A. albilabris* (Zetterstedt) from Europe (*Drosophila albilabris* Zetterstedt, 1860. Dipt. Scand., 14: 6425) in view of strict coincidence in the coloration of legs (cf. Collin, 1952. Entom. Month. Mag., 88: 197). It also somewhat resembles *A. nigrescens* Wheeler of N. America, but differs from it in the longer upper branches of arista and the larger clasper (cf. Hsu, 1949. Univ. Texas Publ., 4920, pl. 1, fig. 9, *A. nigrescens* as "*arizonensis*").

***Amiota (Amiota) promissa* sp. nov. (Fig. 2, A-E)**

Male. Body about 2.5 mm, black, somewhat glossy. Eye dark red and bare. Antenna brown, 2nd joint pale at front, 3rd darker and about 3/4 as broad as long. Arista with about 7 branches inclusive of a large fork, ventral branches 2, as long as the upper ones. Palpus yellowish grey, rounded at tip, basally narrowing and black, and with a few short ventral setae. Ocellar triangle glossy black, periorbit glossy greyish black, ending at the half way of the front below. Front dark velvety reddish brown, anterior half blackish, with a few *fr.* Face white at buccal margin. Carina low, brownish black, wider and darker below. Cheek about 1/7 as broad as the greatest diameter of eye. *orb*<sub>2</sub> twice as apart from *orb*<sub>1</sub> as from *orb*<sub>3</sub>, which is situated inside others. 2nd oral short, less than half vibrissa.

Mesonotum and scutellum somewhat glossy black, *hu* 1, long. *'ac* in about 8 irregular rows. Cross distance of *dc* about thrice or more the length distance. Anterior *scut* divergent.

Legs yellow, anterior femur black except at tip. Preapicals on all 3 tibiae, apicals on 2nd.

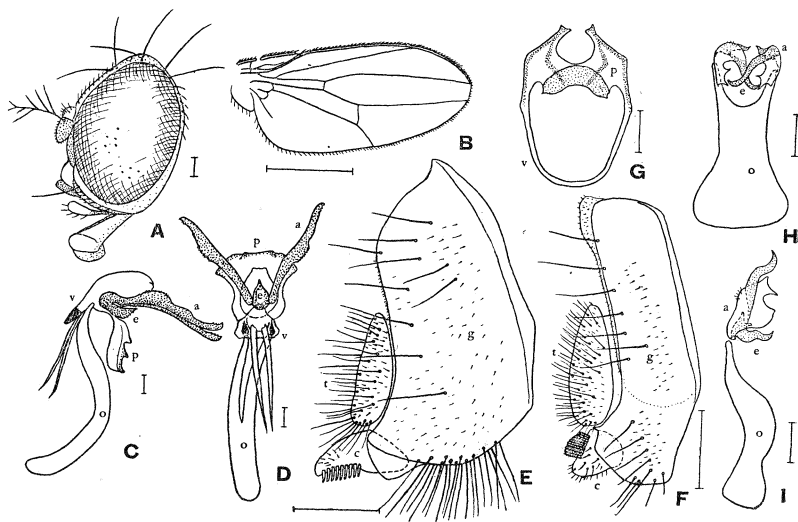


Fig. 2. *Amiota (Amiota) promissa* sp. nov. A. Head; B. Wing; C. Phallic organs (lateral aspect); D. Phallic organs (ventral aspect); E. Peripheral phallic organs.

*Amiota (Amiota)? alboguttata* (Wahlberg). A European form. F. Peripheral phallic organs; G. Phallic organs (posterior parameres and ventral fragma); H, I. Phallic organs (aedeagus and anterior parameres). Scale 1 mm in Fig. B, 0.1 mm in the remaining figs.

Wings (Fig. 2, B) hyaline,  $R_{2+3}$  straight,  $R_{4+5}$  and M rather strongly convergent apically, Cx-index being about 0.8. 3rd costal section with about 25 wart-like bristles on its distal half. Posterior crossvein slightly sinuated. 1st costal section with 2 apical bristles, lower one stronger. 3rd costal section with heavy bristles on its basal 2/3. Halteres white.

Abdominal tergites black, sternites paler.

Periphallalic organs (Fig. 2, E): Genital arch black, broader below, truncate at lower tip, and sparsely pubescent. Heel low, gently angular, toe caudally projected triangularly. Upper portion of genital arch with about 15 setae, lower margin with about 25 setae. Clasper brown, directed inward, distally narrowing, longer than broad, and with about 9 black teeth in a row at the distal lower margin. Anal plate relatively small, fusiform, pale yellow, setigerous and pubescent.

Phallic organs (Fig. 2, C, D): Aedeagus black, conical, apparently single, attached to the base of the anterior parameres. Anterior parameres paired, glossy black, exceedingly elongated, dorso-ventrally compressed, more than thrice as long as aedeagus, submedially swollen ventrally, apically somewhat club-shaped, and both submedially and apically with several minute ventral serrations, submedian serrations in 2 rows. Apodeme of aedeagus elongate, gently curved ventrally, black and basally orange brown. Posterior parameres fused with each other to become a pale trapezoid plate. Ventral fragma pale yellow, conical, and with a pair of slender processes directed anteriorly.

Holotype: ♂, Nuruyu, Miyagi Pref., 8. VIII. '58, collected at human eyes (T. Okada).

Distribution: Honshu (Tohoku).

Relationships: Closely allied to *A. (A.) alboguttata* (Wahlberg) in general structures, but distinguished from the latter in having reddish brown front, brownish femora, and exceedingly elongated anterior parameres.

***Amiota (Amiota) alboguttata* (Wahlberg) (Fig. 2, F-I, Fig. 3, A-L)**

*Drosophila alboguttata* Wahlberg, 1838. Acta Acad. Sci. Holm., 22:11.

Although most of the Japanese forms identified by the author (1956) to this species seem to be identical with var. *subtusradiata* Duda in having the ventral branches of arista as long as or only slightly shorter than the upper ones, in some forms the ventral branches are much shorter, more closely resembling the character (without ventral branches) of European *alboguttata*. Thus it may be safe at present to treat the Japanese forms as *alboguttata*. They show, moreover, exceedingly polytypic structures of genital armatures in males, each differing from that of a European form (Fig. 2, F-I), and they are tentatively divided into several "formae" as below. Each of these formae may represent a semispecies or Rassenkreis of a superspecies or Artenkreis.

**A. (A.) *alboguttata*, forma *clavata* f. nov. (Fig. 3, A-C)**

Male: Body about 3 mm, the largest among the Japanese forms of this species. Arista with about 8 (7-9) branches including a minute fork, ventral branches 2

or 3, as long as the dorsal ones. Facial spot white, rather narrow. Frontal silvery pollinosity not conspicuous. Cx-index about 0.8. Genital arch with heel low. Clasper broader than long, distally with about 9 teeth and medially with a row of strong setae, which are inserted on a dark common lobe or "crown." Aedeagus paired, black, stout and elongate, somewhat club-shaped at tips, and basally broaden. Anterior paramere black, broader than aedeagus, club-shaped at tip, and subbasally with a few sensilla. Anterior parameres and aedeagus are closely apposed to or apparently fused with each other. Posterior parameres compose a quadrate plate, which has a pair of dark horny processes at middle of ventral surface.

Specimens examined: 2♂♂, Kiso, Nagano Pref., 21. VII. '52; 1♂, Takinoyu, Nagano Pref., 17. VII. '54; 2♂♂, Sugadaira, Nagano Pref., 28-31. VII. '51. All collected by the author about human eyes, except for 1 male from Kiso which was collected at right trap.

Distribution: Honshu (Chubu).

A. (*A.*) *alboguttata*, forma *elongata* f. nov. (Fig. 3, G-I)

Body about 2.5 mm. Arista with about 9 branches including a small fork, ventral branches about 3, nearly as long as the dorsal ones. Cx-index about 0.8 (0.8-1.0).

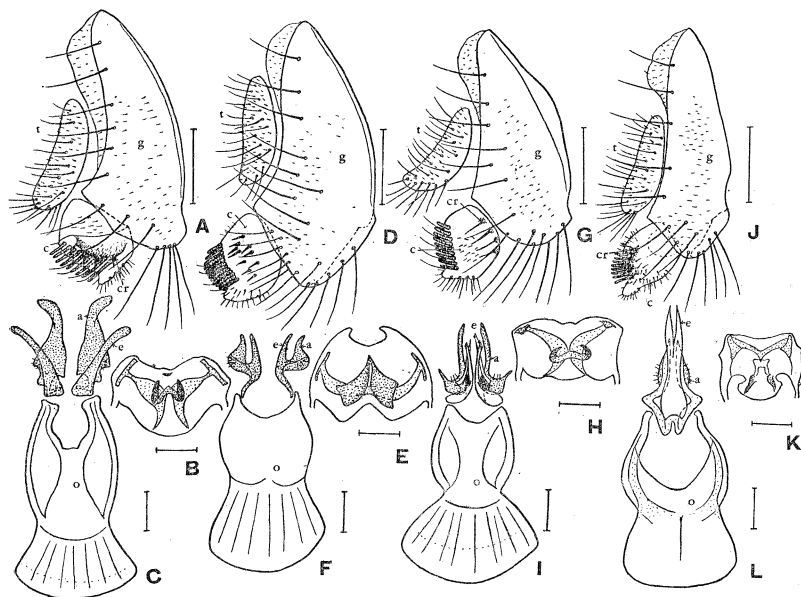


Fig. 3. *Amiota (Amiota) alboguttata* (Wahlberg). A-C. forma *clavata*; D-F. forma *furcata*; G-I. forma *elongata*; J-L. forma *nagatai*. A, D, G, J. Peripheral organs; C, F, I, L. Phallic organs (dorsal aspect of aedeagus and anterior parameres); B, E, H, K. Posterior parameres. Scale 0.1 mm.

Facial pale spot often dark yellow. Genital arch as in *clavata*. Clasper broader than long, distally with about 9-10 teeth arranged in a row, and basally with an interrupted crown, on which about 4 stout setae are inserted. Aedeagus paired, separated from the anterior parameres, each lobe composed of a pair of elongate pale stylets, which are basally swollen and between which a black dental conical process is inserted. Anterior paramere longer than aedeagus, black, proximally broaden and curved outward like a figure L, and with a few sensilla near base. Posterior parameres as in *clavata*.

Specimens examined: 1♂, Kiso, Nagano Pref., 21. VII. '52, collected at human eyes (T. Okada); 3♂♂, Sugadaira, Nagano Pref., 28-31. VII. '59, collected at human eyes (T. Okada).

Distribution: Honshu (Chubu).

**A. (A.) *alboguttata*, forma *furcata* f. nov. (Fig. 3, D-F)**

Body about 2-3 mm, somewhat brownish black, not glossy black as in the other forms. Arista with about 10 (8-12) branches including a small fork, ventral branches about 3 (2-5), slightly shorter than the dorsal ones. Front usually exceedingly pollinose in silvery white below. Facial white spot rather prominent and large. Cx-index about 0.7-0.9. Genital arch with heel high, and ventral tip broadly triangular. Clasper broader than long, with 5-7 or 10-13 teeth, showing dimorphism in number, and medially with irregularly arranged strong setae, not composing common base or crown. Aedeagus paired, black, claw-like, closely apposed to or apparently fused with the anterior parameres, which are also black and claw-like, to take a Y-shape together with aedeagus. Anterior paramere has a few sensilla near middle. Posterior parameres fused with each other to become a trapezoid plate, on which a heart-shaped process is present.

Specimens examined: 1♂, Kurotake, Daisetsuzan, Hokkaido, 12. VIII. '53 (T. Okada); 1♂, Sapporo, Hokkaido, 19. VIII. '53 (T. Okada); 3♂♂, Nuruyu, Miyagi Pref., 8-9. VII. '58 (T. Okada); Kumotoriyama, Tokyo, 4♂♂, 14-16. VII. '53 (T. Okada), 3♂♂, 21. VII. '54 (D. Moriwaki); 1♂ Akadake, Nagano, Pref. 26. VII. '52 (T. Okada); 3♂♂, Kisofukushima, Nagano Pref., 21. VII. '52 (T. Okada); 2♂♂, Seitoshi, Miyazaki Pref., 22. VI. '59 (Y. Nagata). All of the specimens were collected at human eyes.

Distribution: Hokkaido, Honshu (Tohoku, Kanto, Chubu), Kyushu.

Remarks: This form seems to have the widest distribution ranges and the broadest morphological variations among the Japanese forms of this species.

**A. (A.) *alboguttata*, forma *nagatai* f. nov. (Fig. 3, J-L)**

Body about 2.5 mm, glossy black. Ventral branches of arista as long as dorsal ones. Cx-index about 0.9. Genital arch rather narrow, weakly broaden below, with heel rather high. Clasper longer than broad, distally with about 8 teeth arranged in a row, medially with an almost complete dark crown, on which and about which inserted several stout setae. Aedeagus pale, elongate, and distally bifid. Anterior parameres also pale, shorter than but thicker than aedeagus, lateral lobes apparently fused with each other and closely apposed to aedeagus, and laterally with



a few sensilla. Posterior parameres become a quadrate plate, on which a pair of short blackish horn-like processes are inserted.

Specimens examined: 1♂, Higashimera, Miyazaki Pref., 21. VII. '59, collected at human eyes (Y. Nagata).

Distribution: Kyushu.

Remarks: Distinguishable from the other Japanese members of this species mainly in having genital arch narrower, aedeagus pale and single, divided only at distal half.

**Amiota (Amiota) dispina** sp. nov. (Fig. 4, A-G)

Male: Body about 2.5 mm, dark brownish black. Head (Fig. 4, A) mainly black, eye dark red and bare. Antenna orange brown, 3rd joint greyish brown and truncate at tip. Arista with about 12 branches including a minute fork, ventral branches about 5, much shorter than the upper ones. Palpus orange brown, fusiform, with a few ventral hairs. Ocellar triangle mat black, periorbits glossy black, anteriorly reaching the half way of the front. Front mat black, velvety, with grey pollinosity below, somewhat concave along mid-line, and nearly half as broad as the head width at the level of ocellar triangle, exceedingly narrowing below. A few *fr* present. Face yellowish grey, with a prominent or obscure white spot below. Carina low and broad, not reaching the buccal margin. Cheek orange brown, about  $3/8$  as broad as the greatest diameter of eye. *orb*<sub>2</sub> about  $2/3$  as long as *orb*<sub>1</sub> and situated posterior to and inside *orb*<sub>3</sub> and more than twice as apart from *orb*<sub>1</sub> as from *orb*<sub>3</sub>. *orb*<sub>3</sub> nearly as long as *orb*<sub>1</sub>. Only one prominent oral. Occiput mat black.

Mesonotum and scutellum mat velvety black, laterally somewhat glossy. Thoracic pleura mat black, with usual white elliptical spot at each of humeral and subalar regions. *hu* 1, long, above which a few minute hairs are present. *prsc* as long as anterior *dc*, which is about half as long as the posterior *dc*. Cross distance of *dc* over 4 times the length distance. *ac* in about 10 irregular rows. Anterior scutellars slightly divergent, equal to the posterior ones in length. Sterno-index about 0.8.

Legs yellow, posterior tibia with a row of about 10 long hairs on its inner surface. Metatarsus as long as (in fore and hind legs) or slightly longer than (in middle leg) the 3 succeeding tarsal joints taken together. Preapicals on all 3 tibiae, apicals on fore and middle ones.

Wings (Fig. 4, B) hyaline, about 2.3 mm in length, 3rd costal section with about 15 minute wart-like bristles at its apical half. *R*<sub>2+3</sub> slightly curved forward at tip. *R*<sub>4+5</sub> and *M* exceedingly convergent at tip, *Cx*-index being about 0.5. *C*-index about 1.8, *4V*-index about 2.6, *4C*-index about 1.6, *5x*-index about 1.3. 1st costal section with 2 apical bristles, upper one slightly longer. 3rd costal section with heavy bristles on its basal  $2/3$ .

Abdominal tergites black, anterior segments somewhat yellowish at middle. Abdominal sternites pale grey.

Periphallic organs (Fig. 4, C): Genital arch narrowing above but not exceedingly broadened below, upper portion black and with about 6 marginal hairs, lower portion yellow, with about 10 long hairs, and abruptly narrowing below and truncate at lower tip; heel slightly pointed anteriorly, toe not angular. Anal plate fusiform,

pale yellowish grey, separated from genital arch, and with about 20 rather short hairs. Primary clasper pale yellow, longer than broad, distally with a row of about five black teeth, median teeth being the longest, discally with a few weak setae, not composing a crown.

Phallic organs (Fig. 4, D, E): Aedeagus black, paired, claw-like, partially fused with anterior paramere, basally becoming slender rods. Apodeme of aedeagus broad, fan-shaped. Anterior paramere black, distally broaden and with a claw at lateral side, subapically with a few sensilla. Posterior parameres fused with each other

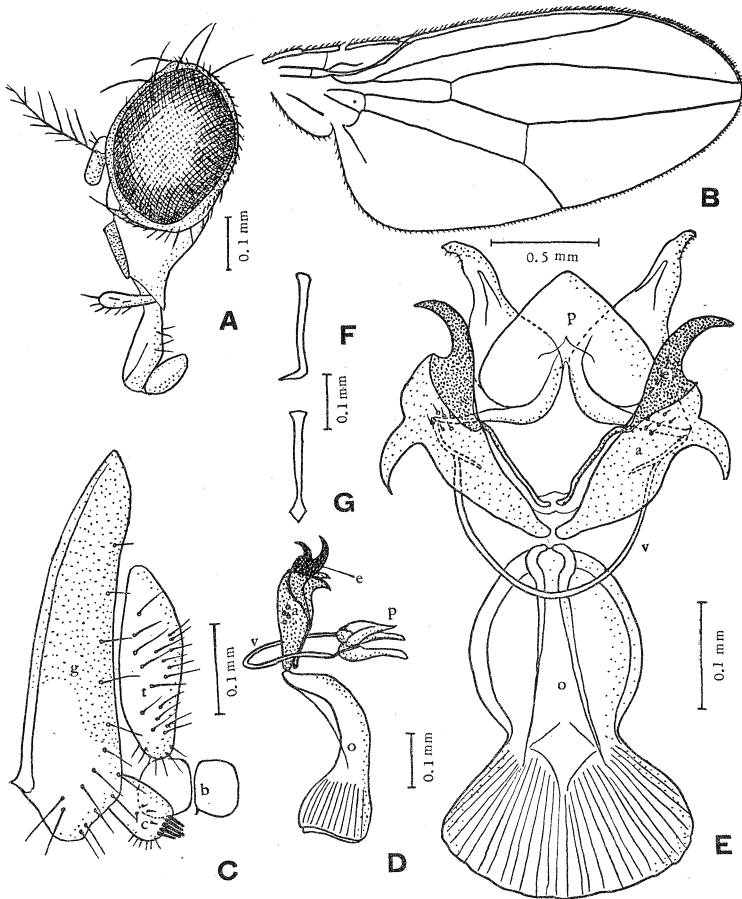


Fig. 4. *Amiota (Amiota) dispina* sp. nov. Male. A. Head; B. Wing; C. Peripheral phallic organs; D, E. Phallic organs; F, G. Ejaculatory apodeme.

to compose a pale heart-shaped plate and dorsally to which projected a pair of apically tapering flaps. Ventral fragma is a narrow semicircular loop.

Internal structures: Testis orange yellow, thick and elongate, basally curved and abruptly narrowing. Paragonia loosely folded twice. Ejaculatory bulb without caeca. Ejaculatory apodeme (Fig. 4, E, G) with a long stem and short paler rhombic plate.

Holotype: ♂, Kinuta, Setagaya, Tokyo, 8. VIII. '59, collected at tree blood of *Quercus* (T. Okada).

Paratypes: 1♂, Kinuta, Setagaya, Tokyo, 15. VIII. '59, collected at tree blood (T. Okada); 1♂, Sugadaira, Nagano Pref., 28. VII. '59, at human eyes (T. Okada); 1♂, Inawashiro, Fukushima Pref., 23. VIII. '59, collected at human eyes (T. Okada).

Distribution: Honshu (Tohoku, Kanto, Chubu).

Relationships: Closely allied to *Amiota* (*A.*) *alboguttata* (Wahlberg), especially with forma *furcata*, described above, but distinguished from the latter in having Cx-index of wing much smaller, and the ventral branches of arista much shorter.

***Amiota* (Phortica) magna** sp. nov. (Fig. 5, A-L)

Male and female: Body about 4 mm in length, dark brown with black spots. Eye dark purplish brown, bare. Antenna with 2nd joint black, basally brown; 3rd dark brown, basally paler, oval and as broad as long. Arista with about 5 short upper branches, without fork and the lower branches. Palpus dark brownish black, triangular, with an apical and a median ventral prominent setae. Mouth-parts black. Ocellar triangle dark brownish black. Periorbits obscurely demarcated, milky white along eye-margin, on which orbitals are inserted in a straight line. *orb*<sub>2</sub> about half as long as *orb*<sub>3</sub>, which is slightly shorter than *orb*<sub>1</sub>. *orb*<sub>2</sub> nearly at middle between *orb*<sub>1</sub> and *orb*<sub>3</sub>, *orb*<sub>1</sub> nearer to *vi* than to *orb*<sub>3</sub>. Front mat velvety black, with numerous fine anteriorly convergent black striations. Minute reclinate setae present along eye-margin at the lower margin of front. Face brownish black, sometimes paler; carina not developed; buccal margin slightly convexed and laterally white. Clypeus large, black, medially milky white. Gena and postgena white at eye margin, and with a row of minute setae. Cheek anteriorly brown, its greatest width about 1/5 the greatest diameter of eye.

Mesonotum greyish brown, somewhat bluish, with a median longitudinal twice constricted black stripe and about 10 irregular black spots on each side. Scutellum black, latero-proximally with large pale grey patches, the centers of which being somewhat yellowish. Mesopleura greyish brown, somewhat bluish, with 3 interrupted longitudinal stripes. Anterior scutellars nearly parallel, posterior ones crossed and as long as anteriors. Anterior *dc* about half as long as posterior ones, cross distance of *dc* about 4 times the length distance. Sterno-index about 0.8. Halteres white, stem somewhat orange.

Legs yellowish grey, femora medially black, tibia with 3 black rings, 1 subbasal, 1 before middle and 1 apical. Tarsal joints apically darker, distal 2 joints black. Metatarsus as long as 3 or 4 succeeding tarsal joints taken together.

Wings (Fig. 5, C) hyaline, veins brown. Crossveins faintly clouded. *R*<sub>2+3</sub> straight, *R*<sub>4+5</sub> and M convergent, Cx-index about 0.7. Posterior crossvein slightly concaved

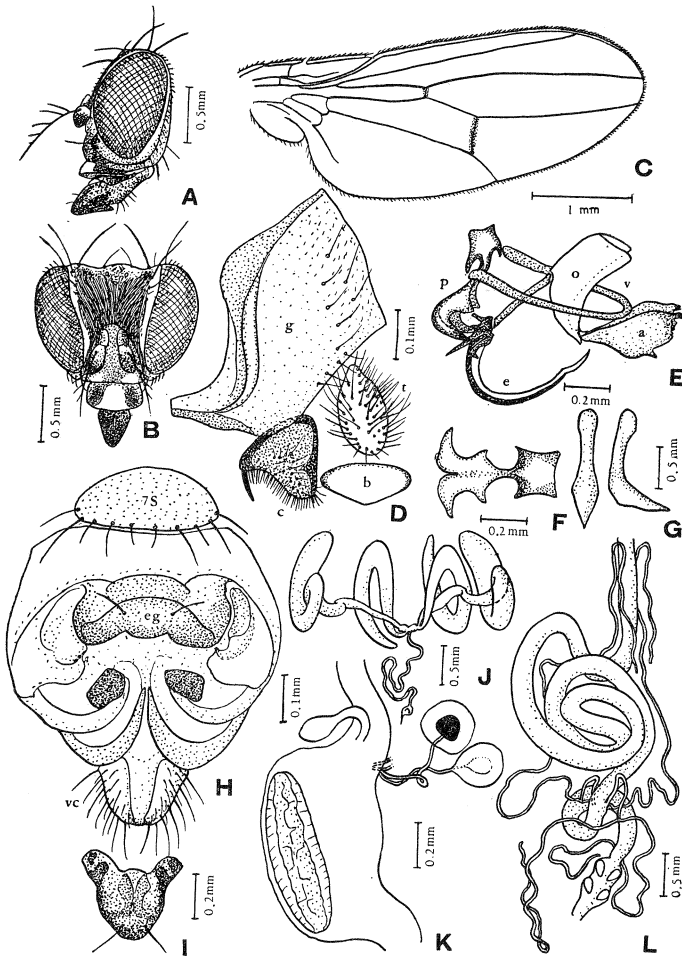


Fig. 5. *Amiota (Phortica) magna* sp. nov. A, B. Head; C. Wing; D. Peripheralhallic organs; E. Phallic organs; F. Posterior parameres; G. Ejaculatory apodeme; H. Female genitalia (ventral aspect); I. Egg-guides; J. Male internal reproductive organs; K. Female internal reproductive organs, containing an egg in uterus; L. Digestive organs.

distally, 1st costal section with 2 rather short apical setae. 3rd costal section with heavy bristles on its basal 3/4. Several minute wart-like bristles on the distal half of the 3rd costal section. C-index about 2.2, 4V-index about 3.0, 4C-index

about 1.6, 5x-index about 1.0.

Abdominal tergites with broad black caudal bands, not convexed anteriorly at middle. Proximal tergites with pale lateral patches. 2nd tergite medially pale. Sternites greyish.

Periphallalic organs (Fig. 5, D): Genital arch broad, dark brown, anterior margin black, heel prominently protruded anteriorly and truncate at tip, toe rounded. Upper portion of genital arch with several shorter hairs and covered by microtrichia, lower portion bare. Clasper black, triangular, setigerous at distal margin and on the surface. Only 1 long stout clasper tooth at the anterior corner of the distal margin. Anal plate oval, pale, separated from the genital arch, setigerous all over the surface. Decasternum broad, triangular and whitish yellow.

Phallic organs (Fig. 5, E, F): Aedeagus slender, curved downward and then forward, yellow but dorsally black, apically pale and pointed, basally contiguous with a large quadrate orange brown ventrally concaved apodeme by means of a dark brown straight rod. Anterior paramere attached to the ventral corner of the apodeme, dark brown, irregularly fusiform, dorsally with a small finger-like projection, apically pointed and with about 2 short stout teeth. Posterior parameres black, irregularly shaped, composed of a median piece and a pair of U-shaped lateral pieces. Ventral fragma black, narrow and arcuated, contiguous with the lateral corners of the median piece of the posterior parameres.

Female genitalia (Fig. 5, H, I): Egg-guide lobes fused with each other to compose a large ventrally projected dark reddish brown thick oval plate, which has a pair of large apical divergent setae. Cerci setigerous, dorsal cerci elongate and bilobed, ventral ones fused with each other. Between egg-guide and cerci there are a pair of small globular reddish brown pieces.

Internal structures (Fig. 5, G, J-L): Mid-intestine coiled 3.5 times. Malpighian tubes with common stalks short and branches long, posterior branches ending free. Rectal papillae 4, oval, about twice as long as broad. Testis cream white, with 1 inner and 2 outer coils, outer coils gradually increasing its thickness distally. Seminal reservoirs oblong, basally swollen. Accessory glands hyaline, folded once or 1.5 times. Ejaculatory bulb small, globular, without caeca. Ejaculatory apodeme dark brown, L-shaped, the plate rhombic and slightly shorter than the stem. Spermathecae short, oval, black, covered by hyaline sheath, and with slender stems. Parovaria with apical knob globular, as large as spermatheca, and stems slender. Ventral receptacle once folded, apically swollen slightly.

Holotype: ♂, Kinuta, Setagaya, Tokyo, 21. VII. '59, collected at tree blood of *Quercus* (T. Okada).

Allotopotype: ♀, collected together with the holotype.

Paratopotypes: 6♂♂, 11♀♀, collected together with the holotype.

Other specimens examined: 5♂♂, 9♀♀, 8-10. VIII. '59; 1♂, 1. IX. '59; 1♂, 4♀♀, 30. IX. '59; 1♂, 2♀♀, 9. X. '59, Kinuta, Setagaya, Tokyo, collected at tree bloods (T. Okada); 1♂, Tokorozawa, Saitama Pref., 9. VIII. '58, collected at human eyes (T. Okada); 1♂, Okutsu, Okayama Pref., 21. X. '59, collected by fruit trap located on a tree trunk of *Quercus* (T. Okada); 1♂, Miyazakishi, 20. VII. '59, at human eyes (Y. Nagata); 11♂♂, Seitoshi, Miyazaki Pref., VII-IX. '59, at human eyes (Y.

Nagata); 3 ♂♂, Higashimera, Miyazaki Pref., 18. VII. '59; 25. VIII. '59, at human eyes (Y. Nagata).

Distribution: Honshu (Kanto, Chugoku), Kyushu.

Relationships: Closely allied to *A. maculiceps* (Duda) (de Meijère in litt.) from Formosa and Sumatra, but distinguished from the allied species in having ventrally bare arista and not entirely yellowish femora.

Remarks: Although the author (1956, Systematic study, pp. 7, 14) distinguished *Amiota* (*Phorica*) from the other members of Steganinae in having no wart-like bristles on the 3rd costal section, close reexamination revealed the presence of such bristles in the present species as well as in *A. (P.) variegata* (Fallén), about 15 and 20 respectively, thus the character seems to be common throughout the subfamily Steganinae, at least the Japanese genera are concerned.

#### Abbreviations used in figures

a. anterior parameres; b. decasternum or bridge; c. clasper; cr. crown; e. aedeagus; eg. egg-guides; g. genital arch; o. apodeme of aedeagus; p. posterior parameres; t. anal plate; v. ventral fragma; vc. ventral cerci; 7S. 7th sternite.